AMENDMENT TO THE CLAIMS

Kindly amend the claims as provided in the following Claims Listing.

Claims Listing:

1. (Presently amended) A method of treating a human patient suffering from Parkinson's disease, said method comprising the steps of:

(a) obtaining one or more embryonic stem cells;

(b) transfecting said stem cells with a nucleic acid encoding Nurr-1;

(c) culturing said stem cells of step (b) in order to become lineage-restricted to dopaminergic neurons; and

(d) engrafting into said patient the cells of step (c) in an amount sufficient to improve motor function in said patient.

Claims 2-3: Canceled.

4. (Previously amended) The method of claim 1, wherein step (c) comprises culturing said cells in the presence of a growth factor.

Claims 5-15: Canceled.

16. (Presently amended) A method of treating a human patient suffering from Parkinson's disease, said method comprising:

engrafting into the patient a population of isolated embryonic stem cells as a suspension of ~~50~~ 100 to 50,000 cells per microliter in a pharmaceutically acceptable carrier, such that the cells form, in the patient, a population of cells in which at least 90% the cells are dopaminergic ~~or serotonergic~~ neurons and improve motor function in said patient.

17. (Previously amended) The method of claim 16, wherein said population of embryonic stem cells expresses a recombinant cell fate-inducing gene selected from the group consisting of Nurr-1 and PTX-3.

18. (Previously amended) The method of claim 17, wherein said cell fate-inducing gene is expressed under the control of a heterologous promoter.

19. (Previously submitted) The method of claim 4, wherein said growth factor is fibroblast growth factor-8 (FGF-8).

20. (Previously submitted) The method of claim 1, wherein step (c) comprises culturing said stem cells in the presence of sonic hedgehog (Shh).

21. (Presently amended) A method of treating a human patient suffering from Parkinson's disease, said method comprising the steps of:

(a) obtaining one or more embryonic stem cells;

(b) transfecting said stem cells with a nucleic acid encoding PTX-3;

(c) culturing said stem cells of step (b) in order to become lineage-restricted to dopaminergic neurons; and

(d) engrafting into said patient the cells of step (c), in an amount sufficient to improve motor function in said patient.

22. (Previously submitted) The method of claim 21, wherein step (c) comprises inducing cell division using a growth factor.

23. (Previously submitted) The method of claim 22, wherein said growth factor is fibroblast growth factor-8 (FGF-8).

24. (Previously submitted) The method of claim 21, wherein step (c) comprises expanding said stem cells in the presence of sonic hedgehog (Shh).

25. (Presently amended) A method of treating a human patient suffering from Parkinson's disease, said method comprising the steps of:

(a) providing dopaminergic neurons ~~derived~~ cultured from recombinant embryonic stem cells, and

(b) engrafting into said patient said neurons of step (a), in an amount sufficient to improve motor function in said patient.

26. (Previously submitted) The method of claim 25, wherein said stem cells ~~or~~ are transfected with a nucleic acid encoding Nurr-1.

27. (Previously submitted) The method of claim 25, wherein said stem cells ~~or~~ are transfected with a nucleic acid encoding PTX-3.

28. (Previously submitted) The method of claim 25, wherein said stem cells are transfected with a nucleic acid encoding Nurr-1 and a nucleic acid encoding PTX-3.

29. (Previously submitted) The method of claim 25, wherein said ~~recombinant~~ stem cells are embryonic stem cells or are ~~derived~~ cultured from embryonic stem cells transfected with a nucleic acid encoding Nurr-1 and PTX-3.

30. (Presently amended) A method of treating a human patient suffering from Parkinson's disease, said method comprising:

engrafting into the patient a population of cells in which at least 90% ~~the~~ of said population of cells are dopaminergic ~~or serotonergic~~ neurons, wherein said cells are ~~derived~~ cultured from isolated embryonic stem cells and are administered as a suspension

of ~~50~~ 100 to 50,000 cells per microliter in a pharmaceutically acceptable carrier in an amount sufficient to improve motor function in said patient.

31. (Previously submitted) The method of claim 30, wherein said embryonic stem cells express a recombinant cell fate-inducing gene selected from the group consisting of Nurr-1 and PTX-3.

32. (Previously submitted) The method of claim 31, wherein said cell fate-inducing gene is expressed under the control of a heterologous promoter.